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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/931,973	08/17/2001	Yosuke Yamada	10417-091001 / F51-137504	5424

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EXAMINER

MENON, KRISHNAN S

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 03/31/2003

10

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/931,973

Applicant(s)

YAMADA, YOSUKE

Examiner

Krishnan S Menon

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Claims 1-12 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-07-060074 in view of Zha (US 6,156,200).

JP-07-060074 teaches a filter device comprising a plurality of hollow fiber membranes having a bundled end, and a free end spread in the fluid (see fig 1), injection means for injecting fluid or gas to the plurality of hollow fibers (4 - lumen side, 1-outside the lumen, fig 1) to agitate the hollow fibers as in claim 1.

JP-74 does not teach means for injecting liquid or gas at the center portion of the hollow fibers to outwardly radiate the fluid or gas other than through the lumen of the hollow fibers. Zha teaches injecting liquid or gas to the center of the bundle of fibers through a porous pipe from the

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bottom of the vessel to outwardly radiate for agitating the fibers (see fig 5 and 6; abstract, and col 7 lines 13-23). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Zha in the teaching of JP-74 for introducing liquid or gas to the center of the bundle for proper distribution of liquid or gas for improved agitation of the hollow fibers.

Independent Claims 2 and 4, and claim 3 add further limitations as follows: filter cylinder (6-fig 1 of JP 74) as in claim 2, which is vertically disposed as in claim 3, and a funnel member in the bottom as in claim 4 (see fig 1).

Independent Claim 5 adds the further limitation of a recovery chamber in the filter cylinder below the funnel chamber, in addition to the limitations of claim 2, which is not taught by JP-74. Zha provides a drain tank below the filter cylinder (see fig 5-schematic). It would be obvious to one of ordinary skill in the art at the time of invention that a chamber could be provided to collect the reject fluid below the funnel chamber of JP-74 for draining the reject fluid from the filter cylinder as taught by Zha.

Claim 6 adds the further limitation over claim 5 of the cylinder being vertically disposed, which is taught by JP-74.

Independent Claim 7 adds the further limitation of a backwash chamber for storing filtrate and for providing fluid for backwash (see 5, fig 1 of JP-74), in addition to the limitations of claim 5.

Claim 8 adds the further limitation over claim 2,5 or 7: cylinder ID 1.5 to 3 times the hollow fiber bundle ID, which JP-74 in view of Zha does not teach. However, it would be obvious to one of ordinary skill in the art at the time of invention to provide a cylinder ID sufficient to have free movement of the fibers inside the cylinder.

Claim 9 and 10 add further limitations over claims 2,5 or 7 as follows: the injection pipe penetrating the bottom surface of the cylinder in claim 9; it extends $1/3$ to $2/3$ through the height

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of the bundle in claim 10. JP-74 does not teach an injection pipe. Zha teaches the injection pipe (see fig 5 and pipe 16, fig 6). It would be obvious to one of ordinary skill in the art at the time of invention to have the teaching of Zha in the teaching of JP-74 for proper liquid and gas distribution for improved agitation of the fibers because the injection pipe penetrates from the bottom and to a distance $2/3$ of the bundle.

Claim 11 adds the further limitation over claims 1,2,4,5 and 7 of injecting raw fluid and air through the injection pipe, which is not taught by JP-74. Zha teaches injecting air and fluid through the injection pipe (abstract; col 7 lines 13-23). It would be obvious to one of ordinary skill in the art at the time of invention to have the teaching of Zha in the teaching of JP-74 for proper liquid and gas distribution for improved agitation of the fibers by injecting fluid and air.

Claim 12 adds the further limitation over claim 1: the injection pipe has holes in the circumference, which is not taught by JP-74. Zha teaches injection pipe with holes (fig 6, col 7 lines 13-23). It would be obvious to one of ordinary skill in the art at the time of invention to have the teaching of Zha in the teaching of JP-74 for proper liquid and gas distribution for improved agitation of the fibers by providing the holes in the injection pipe for the distribution of the fluid and air.

Response to Arguments

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection. However, regarding the argument that JP'074 does not have a structure to inject fluid or gas radially to the center of the hollow fiber membranes, it may be pointed out that during backwash, permeate fluid and air being forced out through the lumen of the hollow fibers in JP '074 come out radially through the wall of the hollow fibers, and is evenly distributed, including at the center of the bundle. Therefore, it is a means for fluid injection to the

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center portion of the plurality of hollow fibers. All the claims, except those that positively recite the fluid distribution pipe, do not distinguish the injection means for the fluid and air in the center portion of the bundle as *external to or independent of* the lumen of the fibers.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 703-305-5999. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Krishnan Menon
Patent Examiner
March 24, 2003


W. L. WALKER
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